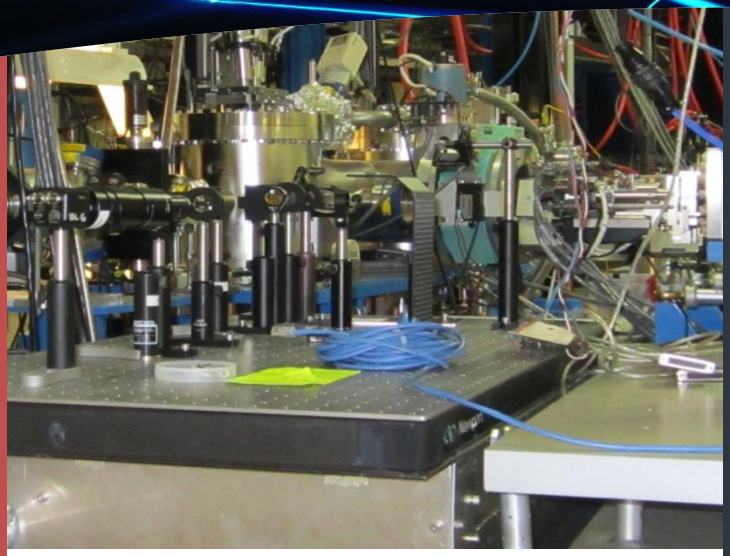
Monthly Newsletter on Laser Safety

The Remaining Eye

June 2012 Issue



Can you guess the lab this cover photo is from? There's a prize if you can.

Interlock Checks

Those of you with laser entryway interlock systems should be planning a laser interlock check this month. Might be a good chance to use the new interlock procedure forms you were all sent last month.

PLEASE NOTE;

With some door lock modifications this requirement can go away. Give me a call if you are interested.

Ken Barat's Retirement

Many people have asked if I am retiring this June, as a normal person would, the answer is NO. But I will be retiring the latest on Oct 17. Earlier if UC and I can settle our dispute over my years of service credit. I will keep you all posted.

Jumping to Humor page?

If so you are missing some good stuff.

Fiber laser incident

Thanks go to Jamie King, LSO –LLNL for this item.
In Dec 2011, at a R&D Dept. of a commercial laser manufacturer. a worker is attempting to measure the output power loss of lasers through optial fibers as a function of a decrease in the bend radius of the fiber. There were 9 laser units combined into 31 fibers operating at 915 nm with 950 W of total laser power. The test setup was a 36"x 96" bread board on a laser table with the laser fibers located on the left side and power measurements on the right (figure 1 next page).The table was equipped with two "emergency-off" buttons within arm's reach of the worker and an interlocking photo diode to shut down during preprogrammed power fluctuations. One of the emergency-off buttons was depressed to shut down the laser.
This operation was fairly simplistic in that it required the worker to:
1. Adjust the fiber optics manually to designated coil diameter.
2. Turn the laser on.
3. Record power output.
4. Turn the laser off and repeat steps.
In order to perform this task, the worker was required to lean over the test rig (Figure 2 below) **The worker determined that it was simply easier to make adjustments to the fiber coil with the laser left on**. During the action, more laser radiation escaped out of the coiled fiber as the bend ratio increased. The worker's smock came in contact with the fibers during the process**. Worker smock immediately melted, igniting the worker's sweater** (Figure 3 next page). What went wrong?
1. A hazard analysis was not performed. 2. The worker did not follow the procedure to turn off the laser prior to making adjustments to the fiber bend ratio.3. The photodiode interlock was not connected during the experiment. The worker did not receive the Laser Safety Officer's approval to operate in this manner.4. The set up required the worker to lean over the fibers to make adjustments.5. No barrier was placed in front of the fiber coil. 6. The worker was new to the area and new to R&D type work. 7. The worker was only familiar with low power lasers through fiber optics and did not receive an introduction to this operation prior to commencing work activities. 8. The worker did not use the test operation checklist and could not produce a Standard Operating Procedure.
In situations where the Optical Density (OD) requirements are greater than OD7, it is much better to enclose the beam or to remove yourself from the area and operate the laser remotely. PPE will provide your eyes protection for a brief period while the laser is burning through the filter-media. Your skin though is generally not protected. This is true even if you are wearing tightly woven clothing, as in this accident. When working with high powered lasers, you need to pay close attention to what you are doing and all of the different hazards that may be present. Take a moment and think about what you are going to do before you do it and ask yourself if what you are about to do is safe.

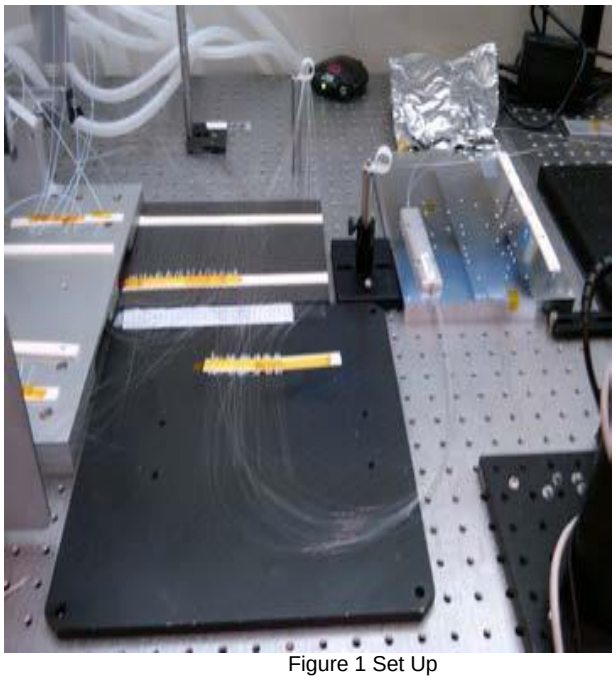


Figure 1 Set Up

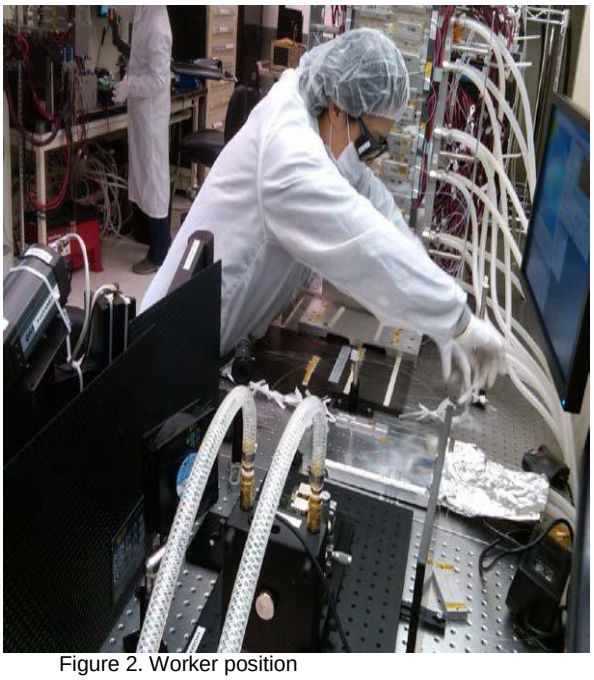


Figure 2. Worker position

Figure 3. Melted smock

Devices for leaning over optical tables

From the mechanic shop comes a device for leaning over a variety of surfaces, which can easily be adapted for optical table use. These come in an array of sizes, some even fold up for storage, others have ladder steps. Contact "Ira Janowitz" <ILJanowitz@lbl.gov>, ergo group for more information.

Navy wants to stop small boats & aircraft without having to use bullets.

The Navy is actively developing a new laser weapon; the reason given for this weapon is the Navy wants to stop small boats and aircraft without having to use bullets. The Navy has a long history of doing work in the field of directed energy, where they have managed to produce kilowatt-scale lasers that can be fielded offensively rather than the traditional defensive roles lasers have served in the past. Two previous demonstrations have shown the laser disabling a boat and shooting down four different test unmanned aerial vehicles (UAVs). Whether or not the laser will be safe if targeting a person is unclear. But with the FDA approving green laser dazzlers for police actions (useable in daylight) the public's perception of science fiction and reality will again be converging. As well as the discussion of a new Classification 4L, L for lethal.

DOE Office of Analysis Report

LBNL has just received a report on Laser Safety Occurrences: 2005-2011 from the DOE Office of Analysis. The report reviews 31 laser incident occurrence reports during this period. Only 4 involve personal injury. Two involved retinal eye injuries and two skin burns. Sandia leads the pack with 5 incidents; we are in a cluster of 5 labs that had 3. Our goal is to be the lab with ZERO. Once the LBNL Laser Safety Committee reviews the report, a summary will be distributed to the laser user community and/or posted on the laser safety web page.

Science Humor

Have you heard that entropy isn't what it used to be?
An electron sitting in a prison asked a second electron cellmate, "What are you in for?" To which the latter replied, "For attempting a forbidden transition."
Q: What is the dullest element?
A: Bohrium

Biology is the only science in which multiplication is the same thing as division.
Did you hear about the famous microbiologist who traveled in thirty different countries and learned to speak six languages? He was a man of many cultures.
If your boss is getting you down, look at him through the prongs of a fork and imagine him in jail.
If you can keep your head when all around you have lost theirs, then you probably haven't understood the seriousness of the situation.
If at first you don't succeed, remove all evidence you ever tried.
If work was so good, the rich would have kept more of it for themselves.

When a third grader was asked to cite Newton's first law, she said, "Bodies in motion remain in motion, and bodies at rest stay in bed unless their mothers call them to get up."
Q: What is the name of the first electricity detective?
A: Sherlock Ohms
Q: Why are quantum physicists so poor at sex?
A: Because when they find the position, they can't find the momentum, and when they have the momentum, they can't find the position.
Q: What did one quantum physicist say when he wanted to fight another quantum physicist?
A: Let me atom.
Two atoms were walking across a road when one of them said, "I think I lost an electron!" "Really!" the other replied, "Are you sure?" "Yes, I 'm absolutely positive."

HUMOR NOTE: I receive more comments on the humor than any of the news articles. Comments have all been positive, but some are surprised with the nature of some of the jokes. REMEMBER I am always striving to raise the barstrench the envelope or just use low class humor when nothing else works.

Look for word puzzle coming in the next issue

"Watch this! If I close one nostril it's like a laser pointer!"